

**What is claimed is:**

1           1. A computer implemented system for control  
2 factor management for a work-in-process (WIP) in a  
3 production system, comprising:

4           a plan engine to generate a plan for an order for  
5           the WIP according to a control factor; and

6           a control factor management module to adjust the  
7           control factor of the plan engine according to  
8           a current value of the control factor in the  
9           production system, a target value of the  
10          control factor, and a priority of the WIP.

1           2. The computer implemented system for control  
2 factor management as claimed in claim 1, wherein the  
3 control factor management module comprises a control  
4 factor matrix for the WIP, the control factor matrix  
5 being a function of the current value of the control  
6 factor in the production system, the target value of the  
7 control factor, the priority of the WIP, and a target  
8 date of the order.

1           3. The computer implemented system for control  
2 factor management as claimed in claim 2, wherein the  
3 control factor management module comprises a database to  
4 store a plurality of historical control factors for the  
5 WIP.

1           4. The computer implemented system for control  
2 factor management as claimed in claim 3, wherein the  
3 control factor management module outputs an alarm signal

4 when the current value of the control factor deviates  
5 from the adjusted control factor.

1 5. The computer implemented system for control  
2 factor management as claimed in claim 4, wherein the  
3 control factor management module comprises a production  
4 monitor module to detect the current value of the control  
5 factor in the production system.

1 6. The computer implemented system for control  
2 factor management as claimed in claim 1, wherein the WIP  
3 comprises wafers for processing and the production system  
4 is an IC foundry.

1 7. The computer implemented system for control  
2 factor management as claimed in claim 6, wherein the  
3 control factor comprises a cycle time for the WIP.

1 8. A computer implemented system for output  
2 planning with control factor management in a production  
3 system, comprising:

4 a capacity model, considering a plurality of  
5 capacity vectors in the production system;

6 a plan engine to receive an order for a product,  
7 reserve a capacity for the order based on the  
8 capacity model, and generate a plan for a work-  
9 in-process (WIP) of the order according to a  
10 control factor; and

11 a control factor management module to adjust the  
12 control factor of the plan engine according to  
13 a current value of the control factor in the

14 production system, a target value of the  
15 control factor, and a priority of the WIP.

1 9. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 8, wherein the control factor management module  
4 comprises a control factor matrix for the product, the  
5 control factor matrix being a function of the current  
6 value of the control factor in the production system, the  
7 target value of the control factor, the priority of the  
8 WIP, and a target date of the order.

1 10. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 9, wherein the control factor management module  
4 comprises a database to store a plurality of historical  
5 control factors for the WIP.

1 11. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 10, wherein the control factor management module  
4 outputs an alarm signal when the current value of the  
5 control factor deviates from the adjusted control factor.

1 12. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 11, further comprising a production monitor module  
4 to detect the current value of the control factor in the  
5 production system.

1 13. The computer implemented system for output  
2 planning with control factor management as claimed in  
17

claim 8, wherein the WIP comprises wafers for processing  
and the production system is an IC foundry.

14. The computer implemented system for output  
planning with control factor management as claimed in  
claim 13, wherein the control factor comprises a cycle  
time for the WIP.

15. A computer implemented system for output  
planning with control factor management in an IC foundry,  
comprising:

a capacity model, considering a plurality of  
capacity vectors in the IC foundry;

a plan engine to receive an order for an IC product,  
reserve a capacity for the order based on the  
capacity model, and generate a plan for a work-  
in-process (WIP) of wafers for processing of  
the order according to a control factor; and

a control factor management module to adjust the  
control factor of the plan engine according to  
a current value of the control factor in the IC  
foundry, a target value of the control factor,  
and a priority of the WIP.

16. The computer implemented system for output  
planning with control factor management as claimed in  
claim 15, wherein the control factor comprises a cycle  
time for the WIP.

17. The computer implemented system for output  
planning with control factor management as claimed in

3 claim 16, wherein the control factor management module  
4 comprises a control factor matrix for the WIP, the  
5 control factor matrix being a function of the current  
6 value of the cycle time in the IC foundry, the target  
7 value of the cycle time, the priority of the WIP, and a  
8 target date of the order.

1 18. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 17, wherein the control factor management module  
4 comprises a database to store historical cycle time for  
5 the WIP.

1 19. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 18, wherein the control factor management module  
4 comprises a production monitor module to detect the  
5 current value of the cycle time in the IC foundry.

1 20. The computer implemented system for output  
2 planning with control factor management as claimed in  
3 claim 16, wherein the control factor management module  
4 outputs an alarm signal when the current value of the  
5 cycle time deviates from the adjusted cycle time.

1 21. A method of control factor management for a  
2 work-in-process (WIP) in a production system, comprising  
3 the steps of:

4 determining a control factor for the WIP;

5 providing a target value of the control factor for  
6 the WIP;

7           detecting a current value of the control factor for  
8           the WIP in the production system; and  
9           adjusting the control factor according to the  
10          current value of the control factor, the target  
11          value of the control factor, and a priority of  
12          the WIP.

1           22. The method of control factor management as  
2           claimed in claim 21, wherein the control factor is a  
3           cycle time for the WIP.

1           23. The method of control factor management as  
2           claimed in claim 21, wherein the control factor is  
3           adjusted with a control factor matrix as a function of  
4           the current value of the control factor in the production  
5           system, the target value of the control factor, the  
6           priority of the WIP, and a target date of the order.

1           24. A method of output planning with control factor  
2           management in a production system, comprising the steps  
3           of:

4           providing a capacity model considering a plurality  
5           of capacity vectors in the production system;  
6           receiving an order for a product;  
7           determining a control factor for the product;  
8           generating a plan for the order base on the capacity  
9           model according to the control factor;  
10          providing a target value of the control factor for a  
11          work-in-process (WIP) of the product;  
12          detecting a current value of the control factor for  
13          the WIP in the production system;

adjusting the control factor according to the  
current value of the control factor, the target  
value of the control factor, and a priority of  
the WIP; and  
adjusting the plan according to the control factor.

25. The method of output planning with control  
factor management as claimed in claim 24, wherein the  
control factor is a cycle time for the WIP.

26. The method of output planning with control  
factor management as claimed in claim 24, wherein the  
control factor is adjusted with a control factor matrix  
as a function of the current value of the control factor  
in the production system, the target value of the control  
factor, the priority of the WIP, and a target date of the  
order.

27. A method of output planning with control factor  
management in an IC foundry, comprising the steps of:  
providing a capacity model considering a plurality  
of capacity vectors in the IC foundry;  
receiving an order for an IC product;  
providing a control factor for the IC product;  
providing a target value of the control factor for a  
work-in-process (WIP) of the IC product;  
detecting a current value of the control factor for  
the WIP in the IC foundry;  
adjusting the control factor according to the  
current value of the control factor, the target

value of the control factor, and a priority of  
the WIP; and  
generating a plan for the WIP of the order base on  
the capacity model according to the control  
factor.

28. The method of output planning with control  
factor management as claimed in claim 27, wherein the  
control factor is a cycle time for the WIP.

29. The method of output planning with control  
factor management as claimed in claim 27, wherein the  
control factor is adjusted with a control factor matrix  
as a function of the current value of the control factor  
in the IC foundry, the target value of the control  
factor, the priority of the WIP, and a target date of the  
order.

30. A storage medium storing a computer program  
which when executed causes a computer to perform a method  
of control factor management for a work-in-process (WIP)  
in a production system comprising the steps of:

determining a control factor for the WIP;  
calculating a target value of the control factor for  
the WIP;  
detecting a current value of the control factor for  
the WIP in the production system; and  
adjusting the control factor according to the  
current value of the control factor, the target  
value of the control factor, and a priority of  
the WIP.

1           31. The storage medium as claimed in claim 30,  
2 wherein the control factor is a cycle time for the WIP.

1           32. The storage medium as claimed in claim 30,  
2 wherein the control factor is adjusted with a control  
3 factor matrix as a function of the current value of the  
4 control factor in the production system, the target value  
5 of the control factor, the priority of the WIP, and a  
6 target date of the order.

1           33. A storage medium storing a computer program  
2 which when executed causes a computer to perform a method  
3 of output planning with control factor management in a  
4 production system comprising the steps of:

5           receiving an order for a product;  
6           determining a control factor for the product;  
7           reserving a capacity and generating a plan for the  
8           order according to the control factor;  
9           calculating a target value of the control factor for  
10          a work-in-process (WIP) of the product;  
11          detecting a current value of the control factor for  
12          the WIP in the production system;  
13          adjusting the control factor according to the  
14          current value of the control factor, the target  
15          value of the control factor, and a priority of  
16          the WIP; and  
17          adjusting the plan according to the control factor.

1           34. The storage medium as claimed in claim 33,  
2 wherein the control factor is a cycle time for the WIP.

1           35. The storage medium as claimed in claim 33,  
2 wherein the control factor is adjusted with a control  
3 factor matrix as a function of the current value of the  
4 control factor in the production system, the target value  
5 of the control factor, the priority of the WIP, and a  
6 target date of the order.

1           36. A storage medium storing a computer program  
2 which when executed causes a computer to perform a method  
3 of output planning with control factor management in an  
4 IC foundry comprising the steps of:

5           receiving an order for an IC product;  
6           determining a control factor for the IC product;  
7           reserving a capacity and generating a plan for the  
8           order according to the control factor;  
9           calculating a target value of the control factor for  
10          a work-in-process (WIP) of the IC product;  
11          detecting a current value of the control factor for  
12          the WIP in the IC foundry;  
13          adjusting the control factor according to the  
14          current value of the control factor, the target  
15          value of the control factor, and a priority of  
16          the WIP; and  
17          adjusting the plan according to the control factor.

1           37. The storage medium as claimed in claim 36,  
2 wherein the control factor is a cycle time for the WIP.

1           38. The storage medium as claimed in claim 36,  
2 wherein the control factor is adjusted with a control

3 factor matrix as a function of the current value of the  
4 control factor in the IC foundry, the target value of the  
5 control factor, the priority of the WIP, and a target  
6 date of the order.